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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/458,322	12/10/1999	STEPHEN J. ZACK	533/198	8722

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EXAMINER
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HUYNH, SON P

ART UNIT	PAPER NUMBER
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2623

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/458,322

Applicant(s)

ZACK ET AL.

Examiner

Son P. Huynh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 32-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 2/16/2007 have been fully considered but they are not persuasive.

Applicant argues there is no motivation to combine Mao with Wu, and furthermore, the combined teaching would be contrary to what is intended in Mao because Mao teaches that the three tables contained in a control map..... Thus, according to Mao, the non content and content data are provided in the same output stream, which the HPAT being at a predetermined location. It would be contrary to Mao's teaching if the multiplexing of non-content data were to be modified according to a future bandwidth availability basis (page 7). This argument is respectfully traversed.

The examiner recognizes that obviousness/motivation can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine Mao with Wu is found in the references themselves (see last four lines in page

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5 of the Office Action dated 11/16/2006). Specifically, Mao discloses a system comprising server equipment (e.g. head end 10 – figure 1) for providing television program content and auxiliary data (e.g., Internet data, advertisement, or channel information, etc.). The television program content and auxiliary data are multiplexed together for providing as transport to the subscriber equipment (e.g. television, or set top box) via a communication channel. The multiplexed signal broadcasted to user television equipment using MPEG-2 (see include, but are not limited to, figures 1-2, 4-5, 8, col. 6, line 15-col. 7, line 18). Wu also discloses a system comprising server equipment (figure 1) for providing television program content (television signal/encoded data) and auxiliary data (opportunistic data). The television program content and auxiliary data are multiplexed together for providing as transport to the receiving equipment (user equipment connected to receive MPEG-2 transport stream –figure 1) via a communication channel. The multiplexed signal provided to the receiving equipment using MPEG-2 standard (see include, but are not limited to, figure 1, col. 2, lines 7-30, col. 4, line 6-col. 5, line 19). Wu further discloses “multiplexing of content streams is statistically perform”, and “selectively multiplexing of formatted non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams” (see discussion on page 5, of the Office Action, dated 11/16/2006). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao to use the teaching as taught by Wu in order to maximize bandwidth utilization and provide cost saving and minimizes disruption to the existing encoders in the field (col. 3, lines 59-61).

In addition, in response to Applicant's argument that "according to Mao, the non-content and content data are provided in the same output stream", the Examiner notes claim 32 recites "...multiplexing formatted non-content data into said output stream". Thus, as a result of "multiplexing formatted non-content data into said output stream", the non-content and content data are provided in the same output stream.

Therefore, motivation to combine Mao with the teachings of Wu is for the benefits discussed above.

For reasons given above, the combination of Mao with the teaching of Wu is proper.

Applicant further argues even if combined, Mao, Wu and O'Loughlin, singly or in combination, fail to teach or suggest Applicant's invention as a whole because there is no teaching or suggestion that the multiplexers in O'Loughlin are used as converter for formatting non-content data or for selectively multiplexing the non-content data into an output data stream for transport to the subscriber equipment, and "Applicant's server equipment provides data to subscriber equipment, the multiplex switch is provided "upstream" of the transport processor, which O'Loughlin's multiplexer 26 provides multiplexed data from consumer equipment (page 5, paragraph 5, page 8-page 10).

In response, these arguments are respectfully traversed.

First of all, independent claims 32 and 40 recite "output stream that is adapted for transport to the subscriber equipment via a communication channel", lines 5-6 (claim

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32), lines 4-5 (claim 40). The limitation “adapted for transport to the subscriber equipment” is language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation (see M.P.E.P 2106 II, C). Thus, the function “for transport to the subscriber” is an optional, but is not required.

Second, the limitation “the multiplex switch is provided “upstream” of the transport processor” is not recited in the claim.

Third, the limitation of converter for formatting non-content data or for selectively multiplexing the non-content data into an output data stream for transport to the subscriber equipment is disclosed by Mao (see discussion on page 4, paragraphs 2-3, Mao also discloses the multiplexed signal are provided to subscriber equipment (e.g., set top box, television) using transport stream – see include, but are not limited to, figure 1, col. 6, line 15-col. 7, line 19).

Fourth, O’Loughlin disclose the multiplexers are converters that are interface between data transport stream 12. The Examiner relies on O’Loughlin for the teaching of a transport processor coupled to multiplex switch for receiving output stream from the multiplex switch and for transmitting to the multiplex switch reverse data channel information received via a reverse data channel (e.g. data transport system coupled to multiplex switch for performing bi-directional communication between the multiplex switch and the data transport – see include, but are not limited to, figures 1-5, col. 6, line 52-col. 9, line 54).

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Therefore, the combination of Mao, Wu, and O'Loughlin is read on the limitations as claimed.

For the reasons given above, rejections on claims 32-44 are analyzed as discussed below.

Claims 1-31 have been canceled.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 32-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao et al. (US 6,886,178) in view of Wu et al. (US 6,594,271) and further in view of O'Loughlin et al (US 6,185,635).

Regarding claim 32, Mao teaches an information distribution system comprising server equipment (programmer 24 and headend 10 – figure 1) for providing both content and non-content data (video data and webpage and information data) to subscriber equipment (set top 38, TV 40, remote control 36), the server equipment comprising:

a multiplex switch (MPEG remux 14, proxy server 22, computer 32 – figure 1) for multiplexing a plurality of formatted content data from server modules to produce an output stream that is adapted for transport to the subscriber equipment via a communication channel (MPEG remux 14 in combination with proxy server and computer 32 for multiplexing a plurality of encoded video data from VTR, camera, external network via encoder 12 and transcoder 20 to produce an output stream that is adapted for transport to set top box, television, etc. via communication channel of network 34 – figure 1; col. 6, lines 15-59);

Mao also discloses formatting HTML web pages and control map into MPEG data packets – col. 25, lines 49-62; col. 6, line 60-col. 7, line 40, figure 2. Inherently, the multiplexing comprises a converter module for formatting non-content data so that the HTML web page and control map is converted into MPEG data packet;

Mao also discloses computer 32 generates the control map, the HTML pages and the URLs for insertion into the industry standard transport layer of MPEG-2 protocol – col. 6, lines 60-64. Inherently, a switching module is used for selectively multiplexing formatted non-content data (web page, information) into the output stream so that the control map, HTML page, URL is selected/generated for insertion into the MPEG-2 protocol.

Mao further discloses a digital QAM modulator upconverter 18 coupled to the remux, computer, and a proxy server for receiving the output from the remux, computer and server (figure 1). However, Mao does not specifically disclose multiplexing of content streams is statistically performed, and wherein the multiplexing of formatted



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non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams; a transport processor coupled to multiplexer switch for transmitting to the multiplexer switch reverse data channel information received via a reverse data channel.

Wu discloses the bandwidth allocation is assigned to Opportunistic Data Processor (ODP) for providing formatted opportunistic data **after** the bandwidth for encoded source data is calculated and available/spare bandwidth is determined. The ODP provides formatted opportunistic data for multiplexing only **after** the available/spare bandwidth is determined and bandwidth allocation for formatted opportunistic data is received. The TSPs also provide encoded source data for multiplexing **after** bandwidth allocations are assigned (col. 2, lines 13-38; col. 4, lines 38-47, col. 5, lines 10-52, col. 6, lines 17-27). Therefore, the claimed feature “multiplexing of content streams is statistically performed” is interpreted as multiplexing of opportunistic data only when total bandwidth used for encoded video streams by all the TSP drops below threshold – see including, but are not limited to, col. 4, lines 40-47; col. 5, lines 14-67; col. 6, line 17-26; col. 6, line 55-col. 46); the claimed feature “selectively multiplexing of formatted non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams” is interpreted as selectively multiplexing formatted opportunistic data into the bandwidth allocation for later multiplexing the formatted opportunistic data into the stream that is

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predicted/determined and then allocated for formatted opportunistic data after calculating the bandwidth for encoded source data and spare/available bandwidth.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao to use the teaching as taught by Wu in order to maximize bandwidth utilization and provide cost saving and minimizes disruption to the existing encoders in the field (col. 3, lines 59-61). However, Mao in view of Wu does not specifically disclose a transport processor coupled to multiplexer switch for transmitting to the multiplexer switch reverse data channel information received via a reverse data channel.

O'Loughlin discloses data transport system 12 coupled to bi-directional multiplexors 18, 24, 26 for receiving the output content from bi-directional multiplexors 18,24,26 and for transmitting to the bi-directional multiplexors 18,24,26 reverse channel information received via data transport system 14,16,multiplexors 20,22,28 (see include, but not limited to, figures 1-5, col. 6, line 52-col. 9, line 54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao in view of Wu to use the teaching as taught by O'Loughlin in order that the service providers can their customer with greater flexibility (col. 5, lines 55-61), or to improve efficiency in data transmission system.

Regarding claim 33, Mao in view of Wu teaches the system as discussed in the rejection of claim 32. Mao further teaches the multiplex switch includes a buffer (i.e.

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proxy 22) for storing non-content data (col. 25, lines 45-48) and a switch controller (i.e. computer 32) for insertion of control map and web pages into the industry standard transport layer of the MPEG-2 protocol (col. 6, lines 60-64). Wu also discloses buffer 162 for buffering the opportunistic data (figure 1) and a switch controller (QLP 130) for determining a bandwidth utilization level of the multiplex switch, the switch controller further for causing at least a portion of the non-content data in the buffer to be multiplexed into the output stream when the bandwidth utilization level falls below a threshold utilization bandwidth level (the QLP 130 causes the opportunistic data from buffer 162 to be multiplexed into the stream when the bandwidth utilization level drops below a threshold utilization bandwidth level – including, but are not limited to, col. 4, lines 40-47; col. 5, lines 14-67; col. 6, line 17-26; col. 6, line 55-col. 46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao to use the teaching as taught by Wu in order to maximize bandwidth utilization and provide cost saving and minimizes disruption to the existing encoders in the field (col. 3, lines 59-61).

Regarding claim 34, Wu further discloses the threshold bandwidth utilization level comprises a utilization level sufficient to process a single time extent (i.e. service interval for a portion of opportunistic data). Wu further discloses digital audio and video data or any other digital data in MPEG-2 standard – col. 4, lines 6-26, lines 37-40). Thus, the content streams are inherently divided into a plurality of respective time extents (time interval corresponds to a portion/segment of the digital data).

Regarding claim 35, Wu further discloses the content streams contain digital data in MPEG-2 standard (col. 4, lines 6-26 and lines 37-40). Thus, the content streams are inherently divided into a plurality of respect time extents (time interval associated with each segment/portion of the MPEG-2 stream). Wu further discloses each TSP, including ODP, send statistical information to the QLP 130, including e.g., a "need parameter" that indicates the bandwidth need of the TSP..., the QLP calculates the total bandwidth and allocates the available bandwidth to each individual TSP in proportion to the TSP's need parameter. Each TSP sends packets to the multiplexer according to the bandwidth allocation (col. 5, line 10-col. 6, line 27). Since the need parameter and amount of bandwidth allocated to the TSP and the ODP are provided, the predetermined number of time extents (number of packets which associated with a time interval) are multiplexed into the output stream (for example, no packets of opportunistic data is multiplexed into the stream if bandwidth allocated for ODP is zero – col. 6, lines 17-26).

Regarding claim 36, Mao further teaches the non-content data comprises control data (i.e. control information in control map) and non-control data (i.e. web pages, URL), and the multiplex switch preferentially multiplexes the non-content control data (figures 1-4, 7; col. 6, lines 26-64; col. 7, lines 1-67).

Regarding claim 37, Mao further teaches the non-content data comprises control data (i.e. control information in control map) and non-control data (i.e., web page, URL), and

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the multiplex switch preferentially multiplexes the control data (figures 1-4, 7; col. 6, lines 26-64; col. 7, lines 1-67).

Regarding claim 38, Mao further teaches the content data includes MPEG data (col. 6, lines 25-67).

Regarding claim 39, Mao further teaches the non-content data includes Internet protocol data (HTML web page, URL, figures 1-5, col. 6, lines 26-64, col. 7, lines 1-67).

Regarding claim 40, the limitations of the method as claimed that correspond to the limitations of the system as claimed in claim 32 are analyzed as discussed with respect to the rejection of claim 32.

Regarding claim 41, Wu further teaches storing non-content data until bandwidth availability enables multiplexing of the stored non-content data (storing opportunistic data in buffer 162 until TSPs do not need all available bandwidth of the transport stream – figure 1; col. 5, lines 1-19).

Regarding claims 42-44, the limitations as claimed correspond to the limitations as claimed in claims 35, 38-39, and are analyzed as discussed with respect to the rejection of claims 35, 38-39.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Naimpally (US 5,619,337) discloses MPEG transport encoding/decoding system for recording transport streams.

Reimeier et al. (US 6,118,820) discloses region-based information compation as for digital images.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son P. Huynh whose telephone number is 571-272-7295. The examiner can normally be reached on 9:00 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S. Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Son P. Huynh

March 5, 2007



SCOTT E. BELIVEAU  
PRIMARY PATENT EXAMINER